



**UNITED
TECHNOLOGIES
PRATT & WHITNEY**

May 20, 1992

Ms. Lynn M. Clune
Engineer
Waste Engineering & Enforcement Division
Department of Environmental Protection
165 Capitol Avenue
Hartford, CT 06106

Ref: Pratt & Whitney RCRA Part B Permit Application EPA ID.
No. CTD990672081.

Dear Ms. Clune:

In response to the May 6, 1992 request for additional information in reference to the subject permit application, Pratt & Whitney is pleased to submit the following:

1. Item by item response summary addressing each of the points noted in the May 6, 1992 letter, and
2. Additions and Modifications to Section C, Exhibit C-1 of the September 5, 1991 Application.

Thank you very much for your cooperation. If you have any questions please call Paul Guilmette at 557-0900.

Sincerely,

R.C. Weiss
Director, Facilities & Services

RCW/PGG

cc: John Podgurski, US EPA
Timothy R.E. Keeney, Commissioner CT DEP
Richard J. Barlow, Bureau Chief-Waste Management
David A. Nash, Director-Waste Engineering and Enforcement
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400 Main Street
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Fold at line over top of envelope to the
right of the return address

CERTIFIED

P 377 411 759

MAIL

NAME: Pratt & Whitney
I.D. NO.: CTD 990672081
FILE LOC: R-1B
OTHER: RDMS #2345

**PRATT & WHITNEY EAST HARTFORD
RCRA PART B PERMIT APPLICATION**

Summary of Response
to
CT DEP Comments Dated May 6, 1992

United Technologies Corporation
Pratt & Whitney
400 Main Street
East Hartford
EPA ID. No. CTD990672081

May 20, 1992

NAME: Pratt & Whitney
I.D. NO.: CTD990672081
FILE LOC: 12-12
OTHER: _____

NOTE: DEP COMMENTS ARE PARAPHRASED IN BOLD TYPE FOLLOWED BY P&W'S RESPONSE.

1. Please submit "Time Zero" designation of the types of waste to be stored in each container storage area and each staging bay. (The submittal of this information shall not affect P&W's capability to decontaminate and change hazardous waste and other materials compatibility groupings in these areas.)

The "Time Zero" designation of the types of waste to be stored in each container storage area are presented in the Table 1 below.

TABLE 1

"Time Zero" Storage Area Designations

<u>Storage Area No.</u>	<u>Waste Type Description</u>
27	Acid Liquids and Solids
28	Acid Liquids and Solids
29	Acid Liquids and Solids
30	Acid Oxidizers/Chromes, Liquids and Solid
31	Fixer/Organic Acids, Liquids and Solids
32	Acid Oxidizers/Chromes, Drums (No Transporters)
33	Non RCRA/EP Toxic Burnable Solids
34	Alkaline/Oxidizer, Liquid and Solid
35	Alkaline/Cyanide Burnable Solid (No Transporters)
36	Alkaline/Cyanide Liquids
37	Alkaline/Cyanide/EP Toxic Treatables (No Transporters)
38	Alkaline/Cyanide/EP Toxic Treatables (No Transporters)

TABLE 1 (Continued)

"Time Zero" Storage Area Designations

<u>Storage Area No.</u>	<u>Waste Type Description</u>
39	Organic Amine Compatibles (No Transporters)
40	Organic Burnable Solids
41	Organic Burnable Solids
42	Organic Burnable Solids
43	Zyglo/Water/Solvent Burnables
44	Oil/Solvent Burnables
45	Oil/Solvent Burnables
46	PCB's, Liquids and Solids

Although a "Time Zero" designation is given in Table 1 for each container storage area, P&W believes that it is inappropriate to do so for the staging areas. The staging areas are transition zones for materials, not storage areas. Consequently, it is not appropriate to utilize RGN compatibility criteria in these areas. Instead, DOT shipping criteria would be used as shipments would likely be kept in a group as received in a single staging area until individual wastes are moved into the storage areas.

2. Please submit cross-sectional diagrams and structural information showing the leak barriers for the container storage areas and the protective curtains for the storage tanks.

Drawings of the "leak barriers" and tank curtains are provided as Attachment 1.

3. Please submit a program explaining all procedures to be used as specified in the enclosed information for the handling and storage of hazardous waste and other materials exhibiting a health hazard degree of 4.

P&W foresees minimal exposures to Health 4 materials for acceptance into the CWS&TF. Present conditions which potentially could lead to Health 4 acceptance in the CWS&TF would be primarily due to either an off-spec commercial chemical product or an incident involving virgin chemical product. In instances where Health 4's are required to be stored in the CWS&TF a specific procedure will be followed. This is to be utilized solely for the handling of the material into and out of storage. The procedure includes:

- Specific label requirements designating waste as a high health hazard.
- Health 4 materials will be stacked one tier high.

- During handling, employees must use appropriate protective clothing and respiratory protection equipment including an escape pack.

Further requirements for the special handling of Health 4 materials in terms of training, security, etc. are incorporated into the day to day operating requirements of the CWS&TF.

4. Please submit inspection logs for the fire equipment and for all items needed for the Contingency Plan (e.g. - Speedi-Dri, respirator, gloves, etc.).

Fire equipment and spill control equipment inspections are described in Section E of the Permit Application. Specific forms or logs are not utilized for fire equipment inspections. These inspections are performed on a plant wide basis by qualified individuals. It would be very difficult to modify this system of inspection for one area of the plant. Equipment needed for the Contingency Plan is inspected as described in Section E and these inspections are recorded on logs similar to those presented in Exhibit E-1. Specific lists of equipment inspected are provided in the Contingency Plan.

5. Revisions by P&W

In addition to the information requested by DEP, P&W has elected to update Section C, Exhibit C-1 of the Permit Application. These revisions provide additional descriptive information for the industrial waste tracking system particularly in relation to waste compatibility determinations. Instructions for incorporating these revisions into the September 5, 1992 application are provided for convenience.

ATTACHMENT 1

Leak Barriers and Tank Curtains

**US EPA New England
RCRA Document Management System
Image Target Sheet**

RDMS Document ID # 2345

Facility Name: PRATT & WHITNEY - MAIN STREET

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

☒ **Oversized (in Site File)** ☐ **Oversized (in Map Drawer)**

☐ **Page(s) Missing (Please Specify Below)**

☐ **Privileged** ☐ **Other (Provide Purpose Below)**

Description of Oversized Material, if applicable:

**FIGURE 1: CENTRALIZED WASTE STORAGE &
TRANSFER FACILITY, ARCHITECTURAL
CONTAINMENT BARRIER DETAILS**

☐ **Map** ☐ **Photograph** ☒ **Other (Specify Below)**

TECHNICAL PLANS

*** Please Contact the EPA New England RCRA Records Center to View This Document ***

**US EPA New England
RCRA Document Management System
Image Target Sheet**

RDMS Document ID # 2345

Facility Name: PRATT & WHITNEY - MAIN STREET

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

☒ **Oversized (in Site File)** ☐ **Oversized (in Map Drawer)**

☐ **Page(s) Missing (Please Specify Below)**

☐ **Privileged** ☐ **Other (Provide Purpose Below)**

Description of Oversized Material, if applicable:

**FIGURE 2: CENTRALIZED WASTE STORAGE &
TRANSFER FACILITY, ARCHITECTURAL TANK
CURTAIN DETAILS**

☐ **Map** ☐ **Photograph** ☒ **Other (Specify Below)**

TECHNICAL PLANS

*** Please Contact the EPA New England RCRA Records Center to View This Document ***

therefore be based on the EPA Guidance as presented with this document.

Once the RGNs have been assigned to each existing waste material it is then necessary to compare each RGN of each waste to each RGN of every other waste which may be stored together to determine if any incompatibilities exist. The determination of compatibility was based on a compatibility matrix contained in the EPA guidance. A reproduction of the matrix is presented as Figure 1. If incompatibilities exist the waste materials are then considered exclusive and they cannot be stored within the same storage area nor can they be mixed within a common tank. The exceptions to this would be in cases of standard and authorized overrides whereby wastes in question have been found to be compatible by way of compatibility testing performed in a laboratory. These exceptions will be explained in further detail in a subsequent portion of this document.

It is apparent that a significant number of comparisons are necessary to evaluate all of the waste materials managed at P&W. To facilitate this task in a manageable manner a computer program was written to perform the comparisons. The compatibility matrix was input into the program as a "truth table" for comparisons and each waste was compared with each other. These comparisons were iterated until all waste materials had been reviewed and placed into a distinct category in which all contributing wastes are compatible. The information obtained through the output of the computer program was

utilized by P&W to assist in determining the number and type of tanks required to manage the numerous bulk waste streams generated. The source code used was simply one program developed to perform the evaluations and produce output. P&W is currently developing a source code designed to evaluate a waste stream's compatibility with RGNs assigned to each tank. Essentially this source code will track tank content's RGNs. When a new waste is to be added to a tank, a comparison will be made using the source code to determine whether compatibility exists. The source code will evaluate the new waste stream on a pass-fail basis. It should be noted that the source code may be modified for several reasons such as to minimize the time required to obtain the result of the evaluation. However, the essential part of the source code is the compatibility matrix or "truth table" contained within the code.

There will be situations where some waste materials cannot be assigned RGNs. This could result from a waste stream that is extremely variable and needs evaluation each time it is generated. In such a situation the waste material will be analytically tested for compatibility as described subsequently each time it is generated prior to its insertion into a bulk tank. In the case of a containerized waste, it will simply be stored in its own segregated storage area.

It should be noted that one alteration has been made to the EPA compatibility matrix or "truth table" used in the source code. This

alteration consisted of removing the incompatibility designation for materials that are soluble in another material. The EPA guidance includes solubilization as an incompatibility because of the potential to transport the solubilized constituents into the environment. Thus, there is no physical incompatibility for materials that fall within this incompatibility designation. Since storage of waste materials will occur at P&W and these activities will occur within approved storage units the possibility for release to the environment is negligible. Therefore since an actual incompatibility does not exist, it was eliminated from consideration in the evaluations performed. Some waste materials contain constituents which according to the guidance makes the waste "self- incompatible". A typical example of a self-incompatibility would be an acid waste material which has previously been mixed with water to arrive at a desired concentration for production use. When assigning RGNs to such a material once it becomes a waste, both an acid RGN would be assigned as well as water RGN.

Since a water RGN and an acid RGN are incompatible utilizing the guidance matrix, the material is then "self-incompatible". The program utilized will contain a subroutine to flag self-incompatible waste streams. Self-incompatibles will be assessed by the master system for incompatible interactions and all incompatible wastes will be red-flagged.

B. FUTURE WASTE STREAMS

It is important to consider the fact that new materials will be managed over time as new processes and/or new raw materials are incorporated into the business activities at P&W. Therefore, a procedure must be available to accommodate new materials entering the waste stream. Similarly, over time some waste materials will drop out of the overall waste stream due to obsolescence of the process or material. However, no procedure is required for materials which drop out of the waste inventory since this action will not influence the waste compatibility source code or management.

In the case of a new waste type, the same basic procedure will be utilized as was utilized in the initial structuring of this overall evaluation. That is, the waste will be assigned appropriate RGNs based on process solution descriptions, MSDS sheet information, any additional chemical specific information documented on the waste, and waste characterization analysis data. If, after assigning RGNs to the new waste material, there isn't a tank or container area which can accommodate all of the assigned RGNs, the source code will be used to establish categories which will accommodate all RGNs. Here again, the only exception to this will be in the case of laboratory testing performed to demonstrate compatibility with all waste RGNs within the tank or container storage area. It is presumed here that a new waste type will fall into an existing EPA waste code already authorized on the Part A application. If any new waste type is not already authorized within the Part A, then a permit modification will be initiated prior to managing the waste.

In addition to new waste materials entering the waste inventory, there will be situations where RGNs were either incorrectly assigned or where, although a waste material has been assigned an RGN due to a particular constituent is too low to actually impart the characteristics of the assigned RGN. Further, since the majority of assigned RGNs originated from raw materials information there will also be cases where a particular constituent or property is consumed or eliminated through process use. In such situations it may be desired to adjust the initial assigned RGN to one that more appropriately reflects the actual constituents or properties of the waste.

To accommodate such situations, P&W will apply their specific knowledge of a waste material or results of analytical testing when reviewing/revising RGNs. P&W will document in the operating log any revisions of RGNs with justification. Any waste material that has had an assigned RGN modified through this procedure will then be treated as a "new" waste and the category assignment procedure described in this section shall apply.

C. LABORATORY TESTING FOR COMPATIBILITY

As indicated above it is necessary to have the ability to deviate from the compatibility matrix as presented in the EPA guidance document when valid compatibility testing is performed. This is necessary due to the limitations of the EPA guidance and due to the chemical specific nature of any particular waste type which may or may not be addressed in the guidance. The most limiting aspect of the guidance is the fact that only binary combinations of constituents is addressed and, in virtually every case, the potential for reactions beyond the binary combinations exists.

It is apparent that attempting to evaluate one waste against all potential combinations of wastes within a category is impossible. Therefore, a manageable system must be established that insures a reliable, safe evaluation to occur utilizing existing wastes. To accomplish this goal the focus will be on bulk liquids.

Testing to evaluate waste compatibility will occur on an as needed basis at P&W. Screening will be done to provide some foreknowledge for subsequent physical testing of the two waste materials. Screening will consist of testing each waste for pH, separate phase materials, specific gravity, flashpoint, cyanide, TVO and evaluation of the chemical name of the primary constituents. Not all screening tests will be utilized on every waste material depending on the specific nature of the waste. P&W will apply their knowledge of the waste to determine the appropriate set of screening test. For instance an aqueous waste such as an acid solution will generally not

have a flashpoint determination conducted due to the known lack of combustible materials within the waste. In all cases where a specific screening test is eliminated, P&W will document such elimination and the justification in the operating log.

The results of the screening will be reviewed to determine if the potential for any extreme reactions is possible. If extreme reactions are anticipated based on the screening testing, then the two wastes will no longer be considered for compatibility evaluation.

If on the other hand a review of the screening does not indicate the potential for extreme reactions, commingling of the waste will be allowed provided that the IWTS compatibility issues have been addressed and co-storage is authorized.

For any waste stream to enter a storage area or bulk storage tank, all apparent "incompatibilities" flagged by the industrial waste tracking system must be addressed before storage. To allow co-storage of wastes flagged as apparently "incompatible" by the IWTS, each waste stream must be shown through actual documented laboratory testing that it is compatible with each of the RGNs which exist in the specified storage area or bulk tank. In other words, the EPA document will be strictly adhered to under all circumstances except in those situations where actual documented compatibility testing does not support the "incompatibilities" described by the EPA reference document.

Compatibility testing for a given waste stream will occur as follows:

1. Obtain 100 ml of representative sample from the waste in question. The waste sample collected shall be representative of the entire waste volume and shall be collected utilizing precleaned, dedicated sampling equipment.
2. Place 20 ml of the specific reference standard into a 50 ml beaker.
3. While mixing, add a 20 ml aliquot of the waste sample to the beaker. Be sure to add the waste dropwise initially, to reduce hazards associated with extremely violent reactions.
4. Note any signs of violent reactions, fuming, misting, gas production, excessive heat, or other reactions. Continue monitoring for 10 minutes afterward while continuing mixing.
5. The waste will be deemed incompatible with the RGN whenever:
 - a) extreme fumes, gas, or reactions are produced.
 - b) the mixing is sufficiently exothermic as to result in a mixture which is hot to the touch.

If the results of the screening test and the physical tests do not indicate incompatible materials, the wastes will be considered as compatible and commingling of the waste types will be authorized by override. Conversely, if evidence of extreme reaction is noted, the materials will be considered incompatible and shall not be commingled. In accordance with 40 CFR 264.17 the results of all testing and observations will be documented and recorded in the operating log of the facility.

As authorized under 40 CFR 264.17, "the results of the treatment (or storage) of similar wastes by similar treatment (or storage)

processes and under similar operating conditions" is an acceptable criteria on which to base the mixing of incompatible waste materials. In the event that Pratt & Whitney desires to place a waste material in with an "incompatible" material (based on RGN incompatibilities), Pratt & Whitney will document in the operating log the justification for such action.

This documentation will largely consist of several items as follows: (1) Pratt & Whitney personnel specific knowledge of the waste materials involved given Pratt & Whitney's long history of handling such wastes, (2) Pratt & Whitney documented bench screening of the waste materials involved, or (3) engineered control on waste management structures which will prevent an adverse reaction.

As mentioned in the laboratory testing section of this document, all bench tests conducted will have their results recorded in the operating log. The operating log then becomes a repository for reference in the event mixing of the same RGN incompatibles should occur in the future. Therefore, the operating log will be utilized to justify mixing of RGN incompatible materials when previous bench testing has demonstrated acceptability.

Finally, the design of the "new" waste storage tanks has incorporated engineered controls to prevent particular adverse reaction denoted in the EPA Guidance Document. The tanks have been designed to control the evolution of heat during the mixing of waste materials. Therefore, in those cases where heat generation is the only adverse reaction anticipated by the Guidance, the designed

P&W - EH
WASTE CHARACTERISTICS
SEPTEMBER 5, 1991
REVISED MAY 20, 1992

controls will mitigate the effects of the heat generation by controlling it and thus make the mixing of such materials acceptable.

D. CONTAINER COMPATIBILITY

In addition to waste compatibility between different waste types, it is necessary that the container or tank holding any particular waste material be compatible with its contents. An evaluation of the waste materials managed at P&W versus acceptable container types has therefore been performed. Literature from tank and container manufacturers has been utilized to determine material compatibility. Note that only the materials currently utilized by P&W have been evaluated. Compatibilities of the myriad of container and tank linings, resins and coating materials has not been reviewed. A single manufacturer may produce ten to twenty different FRP resins for differing purposes. Given the sheer magnitude of the number of different products available it is impossible to evaluate all of them against all of the waste streams at P&W. The materials utilized by P&W have been reviewed and are presented in Table 2.

Container and tank materials of construction are reviewed on a case-by-case basis for compatibility with the contained waste. P&W will not place any waste materials into an incompatible tank or container nor will P&W place any waste materials into a tank or container that has not been thoroughly cleaned and rinsed if the waste material entering is incompatible with that previously contained.

As in the case of waste compatibility evaluations, there are limitations to this container compatibility review. It is typical that a manufacturer will specify container or tank compatibility

based on a single material at a specific concentration and a given temperature. For instance, nitric acid is compatible with high density polyethylene at concentrations up to 30 percent and temperatures up to 140 degrees F. Beyond these limits this material is not compatible with nitric acid. The evaluation of container compatibility utilized in this document assumes ambient temperature of the waste material and where available, utilizes the chemical concentration of a waste material. When the chemical concentration of a waste material is not available or is known to be less than the minimum concentration reflected in the manufacturer's data, the container material is listed as compatible.

As with the case of RGN assignments, container compatibility has been evaluated based on certain assumptions. Since manufacturers typically address only single component materials and only at significant concentrations, i.e. percentage range, and considering the fact that most waste materials are multi-component materials, it is inevitable that incompatibilities will manifest themselves where actual compatibility problems do not exist. In such cases, P&W will apply their knowledge of the waste and its properties when selecting container materials. Section D of this document provides additional information on container types utilized by P&W.

INSTRUCTIONS FOR INCORPORATING
ADDITIONS AND MODIFICATIONS
TO THE SEPTEMBER 5, 1991
RCRA PART B PERMIT APPLICATION
FOR
United Technologies Corporation
Pratt & Whitney
400 Main Street
East Hartford, CT

EPA ID. No. CTD990672081

REVISION DATE: May 20, 1992

<u>ITEM</u>	<u>REMOVE PAGES</u>	<u>REPLACE PAGES</u>
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VOLUME I - SECTION C		
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	II-B-1 THRU II-B-7	II-B-1 THRU II-B-9
	SECTION III, A THRU D	SECTION III, A THRU D
	SECTION III, TABLES 2 & 3	NONE (TABLE 4 BECOMES TABLE 2)

EXHIBIT C-1

Waste Characteristics

P&W - EH
WASTE CHARACTERISTICS
September 5, 1991
Revised May 20, 1992

WASTE CHARACTERISTICS
PRATT & WHITNEY
EAST HARTFORD MANUFACTURING FACILITY
EAST HARTFORD, CT

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B. INDUSTRIAL WASTE TRACKING SYSTEM

A computerized Industrial Waste Tracking System (IWTS) will be used at P&W to keep track of the wastes being generated from the point of generation until treatment, storage, or shipment off-site for disposal covering all intermediate movement the waste may take. This system will be used for waste generated on-site as well as for waste generated off-site which is managed at the facility.

Every waste stream managed at the facility is assigned an Item Identification Number. The industrial waste tracking system associates these identification numbers with specific information regarding the waste including assigned reactivity group numbers.

The tracking system utilizes several computer programs and display screens which electronically record each transaction related to the movement of the waste. This system is continually being updated and improved to cover more activities and to incorporate new regulatory requirements as they evolve.

1. Manifest Issuance

A bar coded Internal Waste Manifest and bar coded waste labels are assigned to each drum or lot of drums issued to accumulate waste. This bar code is utilized as the basis for tracking the waste on the IWTS and identifies the waste container from issuance through proper disposal. The manifest accompanies the container(s) whenever a container is moved from one location to another. Once full, the generating department will write the full date on the label and then call the waste handling department to pick up the waste. At the

time of the call, the waste handling department will input the container full date into the IWTS. The waste will then be transferred into the facilities waste storage location and recorded on the IWTS. All drums which are placed in the CWS&TF will be marked with a container full date whether or not the container is full. This date is used for compliance with the land disposal restrictions.

2. Waste Transfer/Storage

Waste which is transferred from a an off-site facility is tracked through the use of the IWTS. The computer transaction moves the waste from its current storage location to a new storage location at another facility. The generating facility supplies all of the waste characteristics information based on knowledge of the waste generating process, manufacturer's information (MSDS sheets, etc.), and based on waste characterization analysis data. Before a waste is shipped from an off-site facility, a responsible member of the facility will call the designated Waste Treatment Facilities Department employee at P&W East Hartford and describe the waste. If the description provides adequate information, the branch will be given permission to ship the waste. Otherwise, additional information or analysis will be requested. When the waste arrives at P&W East Hartford, it will be visually inspected and screened per the Waste Analysis Plan to verify that it meets the description provided on the P&W Internal Waste Manifest and the Hazardous Waste Manifest. If the results

of the visual inspection and/or preliminary screening indicate inconsistencies with the data provided, then P&W East Hartford will conduct some corroborative testing and/or will request further information from the generating facility. Waste screening results are put into the IWTS and then the system determines if the results are acceptable or not. Results must be acceptable according to the IWTS before acceptance. Wastes are received only from UTC facilities which utilize waste identification procedures meeting the requirements of this plan. Use of the IWTS minimizes the risk of receiving at the P&W East Hartford facility, wastes which are not properly labeled or identified. The designated P&W East Hartford employee who accepts the waste is responsible for ensuring compliance with all applicable land disposal restrictions before the waste is disposed, by requesting additional information and/or performing the analytical testing required. Both on-site and off-site generators will be required to review their waste stream characterizations following procedures which meet or exceed the requirements described in the Waste Analysis Plan on an annual basis or whenever there is a change in the raw materials or process generating the waste.

3. Waste Compatibility

The following text describes the method used to determine the compatibility of wastes in the IWTS system for storage purposes.

1. Each Item Identification belongs to up to 8 reactivity groups. They are represented by RGN numbers on the Item Id Table screen. (PF1 off of the Support Menu - Page 1). There are approximately 40 RGN numbers.

2. Each Storage Location by plant has a pre-determined list of valid and compatible items that may be stored together. This list was derived from the current list of items in storage that were determined to be compatible by: a) compatible RGN; b) standard overrides

3. Upon attempting to move a manifest into storage IWTS does the following checks:

A. Is the Item for that manifest already on the compatible list? - If yes storage occurs

B. IWTS attempts to add the item to the list:

1. The RGN's for the new item are retrieved

2. The RGN's for the new item are compared to all other RGN's for items on the list via the compatibility matrix. The compatibility matrix is derived from the EPA document, a method for determining the compatibility of hazardous wastes. If there is an "x" in the matrix for any of the combinations - storage is denied, otherwise storage occurs and the list is updated so that in the future the item will pass Test A.

3. "Standard" overrides of storage denial occur when waste streams have been shown through documented compatibility testing to not display the "incompatible" reactions. In other words, "standard" overrides are actually justifiably compatible wastes and are therefore listed.
4. If a manifest is denied storage access, designated people in each plant may update the items per storage location screen and add that item to the list via an "authorized" override. "Authorized" overrides required an "environmental" level security clearance to implement. The "authorized" override provision will allow wastes to be stored after a documented justification based on waste compatibility testing, knowledge of process, or other special considerations such as overpacking has been established. Waste ID #'s which have received "authorized" overrides are taken off of the storage location list when the item(s) is removed from storage. In the case of bulk wastes, RGN's are accumulated as waste ID #'s are added to bulk tanks. If an "authorized" override has occurred for comingling in bulk tanks, flagged RGN's are removed from the tank when the contents are completely removed and flushed.

4. Waste Disposal

Waste can be disposed of through treatment on-site in the NPDES permitted treatment system or off-site via a licensed vendor. This transaction is tracked through the use of the IWTS.

5. Split/Move/Repack

Another transaction which takes place at the P&W East Hartford Facility is called the Split/Move/Repack transaction. This transaction tracks the movement of waste within a facility (i.e. change in storage location within a facility), the repackaging of waste (i.e. from a 55 gallon container into 2-30 gallon fiber pack drums), and splits of one waste stream into two waste streams (i.e. paint sludge separated into 2 phases - solid pigment and solvent carrier.) This transaction tracks both waste streams to different storage locations and disposal facilities.

Currently, the following screens exist on the industrial waste tracking system:

Manifest Issue Screen - This screen is used to enter, modify, delete or inquire against a specific industrial waste manifest.

Manifest Storage Screen - This screen is used to enter receipt and storage information.

Shipping Order Screen - This screen is used to create batch numbers and to add manifests to a shipping order.

Treatment Batch Screen - This screen is used to create batch numbers and to add manifests to a treatment batch.

Transfer Shipment Screen - This screen is used to create batch numbers and to add manifests to a transfer order.

Transfer Receipt Screen - This screen is used to enter the receiving location/shift and received date.

Split/Move/Repack Screen - This screen is used to add, change, delete, or inquire on a specific split/move/repack document.

Accumulation Inquiry Screen - This screen will list all manifests which are accumulating in a given accumulation area and plant and will note if it is past its warning dates.

Storage Inquiry Screen - This screen is used to display all manifests in inventory for a particular plant storage location and all material category numbers. The screen is used prior to a move/split/repack, or after a shipping, treatment, or transfer initial setup.

Accumulation Search Screen - This screen displays all of the manifests which are due to be picked up from accumulation within the date range specified on the screen for a given plant.

Item ID Generation Search Screen - This screen is used to display information about the generation of an item ID for a generating plant in a specific time frame. The information about all manifests that were issued within the given time frame for the item ID is displayed.

Shipping/Transfer Search Screen - This screen displays all shipping or transfer orders which were created for a given plant within a specific date range.

Manifest Summary Inquiry Screen - This screen displays the history for a particular manifest. The main manifest as well as any suffixed manifests will be displayed with both information from the issue and storage screens.

Item Table Screen - This screen is used to add, change, delete, or inquire against the valid item identification numbers in the system.

Category Table Screen - This screen is used to add, change, delete or inquire against the valid category codes in the system.

Storage Location Table - This screen is used to add, change, delete or inquire against the valid storage locations in the system.

Treatment Location Table - This screen is used to add, change, delete, or inquire against the valid treatment locations in the system.

Vendor Table - This screen is used to add, change, delete, or inquire against the valid vendor codes in the system.

Procedure Table - This screen is used to add, change, delete, or inquire against the valid procedure codes in the system.

EPA Number Table - This screen is used to add, change, delete, or inquire against the valid EPA numbers in the system.

Hazard Class Table - This screen is used to add, change, delete, or inquire against the valid hazard classes in the system.

Plant Table - This screen is used to add, change, delete, or inquire against the valid plant codes in the system.

Container Type Table - This screen is used to add, change, delete, or inquire against the valid container types in the system.

Handling/Treatment Code Table - This screen is used to add, change, delete, or inquire against valid handling/treatment codes in the system.

Accumulation Area Table - This screen is used to add, change, delete, or inquire against the valid accumulation areas in the system.

DOT/Misc. Label Table - This screen is used to add, change, delete, or inquire against the valid DOT/Misc. labels in the system.

Security List - This screen displays all security records in the system for a given plant.

Security Screen - This screen is used to add, change, delete, or inquire against security records for users and supervisors.

In addition to these interactive screens, a number of documents have been automated in the IWIS. These documents are printed on a bar code printer and include the following:

- Certificate of Transfer
- Certificate of Disposal
- Internal Waste Manifest
- Hazardous Waste Label
- Worksheet (Issued with Manifest)

The labels include RCRA required language which is not modified unless required by regulation. Other language on the documents may change from time to time as the system is continually optimized.

III. COMPATIBILITY TESTING

A. EXISTING WASTE STREAMS

Compatibility evaluations of waste materials is necessary to insure proper management of wastes. Commingling of incompatible waste materials can result in undesired and dangerous reactions. To evaluate the potential for such undesired reactions, the existing waste streams at the Pratt & Whitney East Hartford facility have been reviewed for compatibility. The guidance material utilized for the evaluations performed was an EPA document entitled "A Method for Determining the Compatibility of Hazardous Wastes", EPA/600/14, April, 1989. This EPA document presents a methodology for binary evaluations of waste materials based on "reactivity group numbers" (RGNs) which are assigned to waste materials utilizing various tables within the guidance.

The consequences of commingling of incompatible materials have been categorized into twelve basic classes in the EPA guidance document. These classes are; 1) heat generation, 2) fire, 3) gas formation, 4) formation of toxic fumes, 5) generation of flammable gases, 6) volatilization of toxic or flammable substances, 7) formation of substances of greater toxicity, 8) production of shock and friction-sensitive compounds, 9) pressurization in closed vessels, 10) solubilization of toxic substances, 11) dispersal of toxic dusts, mists, and particles and 12) violent polymerization. These potential

reactions encompass the range of reactions which could be anticipated for the waste materials managed at P&W and have therefore been utilized in the compatibility evaluations. The single exception is reaction #10, solubilization of toxic substances, which has not been considered an incompatible reaction. The justification for this is described in further detail in subsequent portions of this compatibility evaluation.

The methodology presented in the EPA document has several important limitations. The guidance was developed on the assumption that waste interactions are due to the reactions produced by pure chemicals in the wastes. A further assumption was that the chemicals react at ambient temperature and pressure and that the reactivities are uninfluenced by concentration, synergistic and/or antagonistic effects. Thus, unless virtually pure materials are mixed, the reactions anticipated by the EPA document may not occur as predicted. Lastly and perhaps most important is the fact that the guidance only performs binary comparisons of materials. That is, only two RGNs can be evaluated at one time. Thus, if a ternary or quaternary combination of RGNs results in an incompatibility, it will not be reflected in the methodology presented in the guidance. However, evaluations have been conducted in accordance with the guidance to estimate potential adverse reactions.

The first step in the waste compatibility determinations was to assign RGNs to the waste materials managed at the facility. The master list of waste materials handled at the facility is presented as

Table 1. This list contains both RCRA hazardous and RCRA nonhazardous waste materials as well as the P&W facility where the waste was generated. Each waste stream has been given a P&W waste identification number at its point of generation. It is infrequent that mixing of process waste streams occurs. However, when and if it should occur, the RGNs assigned are based on the characteristics of the materials and knowledge of the process streams.

The basic information sources utilized in the assignment of RGNs were the process solution (PS) descriptions, the MSDS sheets for raw materials from which waste were derived, any available waste specific knowledge contained in documented form, and waste characterization analysis data. The waste analysis plan includes additional information regarding screening and acceptance of off-site wastes.

It should be noted that several RGNs can be assigned to any particular waste based on the actual constituent makeup of the waste. Further, there will be some materials which have no RGNs assigned to them. This set of materials will be primarily occupied by lab pack wastes. Since each lab pack contains a unique set of waste materials, RGNs can only be assigned upon creation of the lab pack itself. Once RGNs have been assigned to the lab packs they will be handled as described in Section B, "Future Waste Streams".

In addition to constituent descriptions and RGN assignments, all P&W waste (on-site & off-site) have been broken down into generic groupings, i.e., acids, alkalies, etc., per the request of the regulatory agencies. The compatibility of waste materials will